Delaware's Low Emission Vehicle Program

Division of Air Quality
Public Hearing
September 23, 2013

Blue Skies Delaware; Clean Air for Life

Low Emission Vehicle Program

Outline for Low Emission Vehicle Program

- Tailpipe Requirements
  - Exhaust
  - Evaporative
- Greenhouse Gas Requirements (MY 2017-2025)
  - PC/LDT & MDPV Standards
  - Air Conditioning Requirements
  - Fleet Average

7 DE Admin Code 1140 – "Delaware Low Emission Vehicle Program"

Background:

- DNREC Adopted CA LEV II Vehicle Emission Standards in Dec 2010.
- The LEV III amendments set more stringent fleet average non-methane organic gas (NMOG) requirements and established a new more stringent SULEV standard.

State of the Air

AMERICAN LUNG ASSOCIATION. IN DELAWARE

Failing Grades in Delaware for Ozone and Particle Pollution

	County	Grade	Wgt. Avg	Orange Days	Red Days	Purple Days
High Ozone Days	Kent	D	2.7	8	0	0
	New Castle	F	9.7	26	2	0
	Sussex	F	5.3	13	2	0

	County	Grade	Wgt. Avg	Orange Days	Red Days	Purple Days	Grade (Annual)	Design Value
Particle Pollution	Kent	A	0.0	0	0	0	Pass	9.4
	New Castle	D	3.2	8	1	0	Pass	10.7
	Sussex	A	0.0	0	0	0	Pass	9.4

	County	Total Population	Under 18	65 & Over	Pediatric Asthma	Adult Asthma	COPD	CV Disease	Diabetes	Poverty Estimate
Groups at Risk	Kent	164,834	40,343	22,891	3,450	12,260	6,448	45,946	11,889	23,941
	New Castle	541,971	123,789	67,894	10,587	41,396	20,963	150,622	38,601	62,874
	Sussex	200,300	40,527	42,724	3,466	15,035	9,527	67,267	18,185	24,361
	Total	907,135	204,668	133,464	17,503	68,691	36,938	263,835	68,675	111,176

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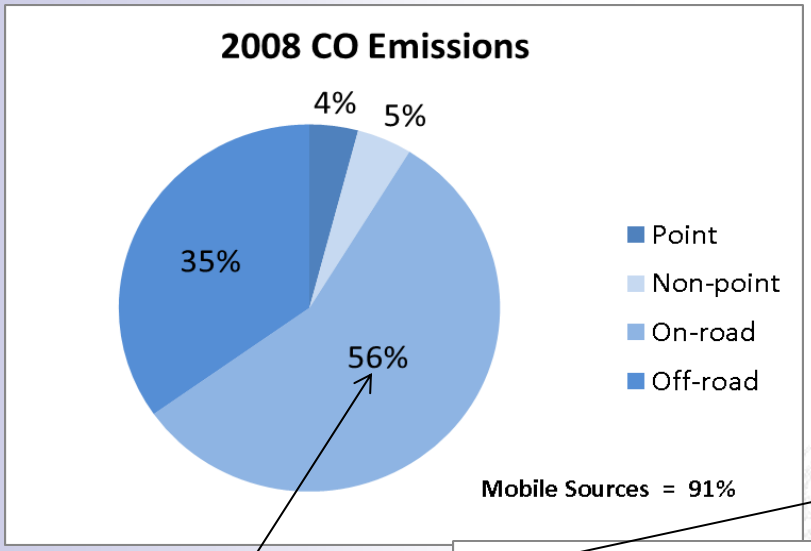
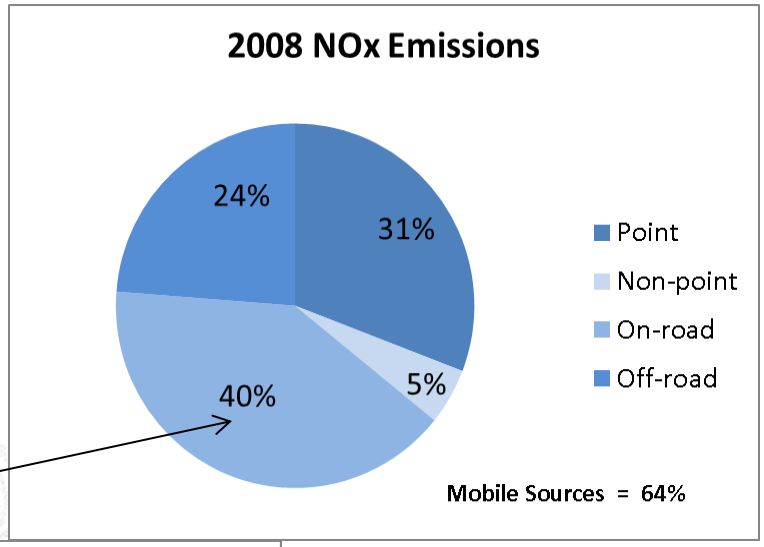
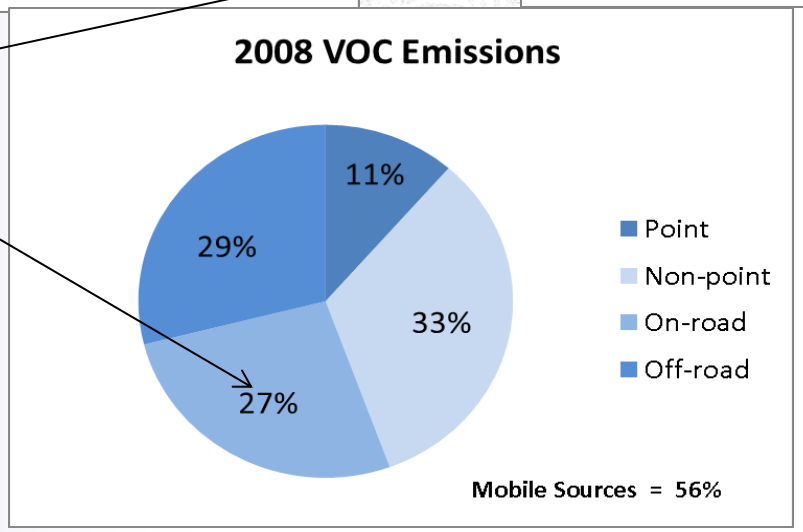
Delaware Emissions







Vehicle emissions have become Delaware's largest source of pollution!

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A solution to the problem

- Clean, efficient vehicles are needed to meet Delaware's air quality, public health, and climate change goals
- The LEV III standards will drive the development of the cleanest cars that use diesel, gasoline, or gasoline-electric hybrid internal combustion engines.

The Criteria

- The criteria for controlling vehicle emissions consist of three distinct parts:
  - Exhaust emission criteria requirements;
  - Evaporative emission requirements and the technical feasibility and costs to achieve the requirements; and
  - Greenhouse gas requirements.

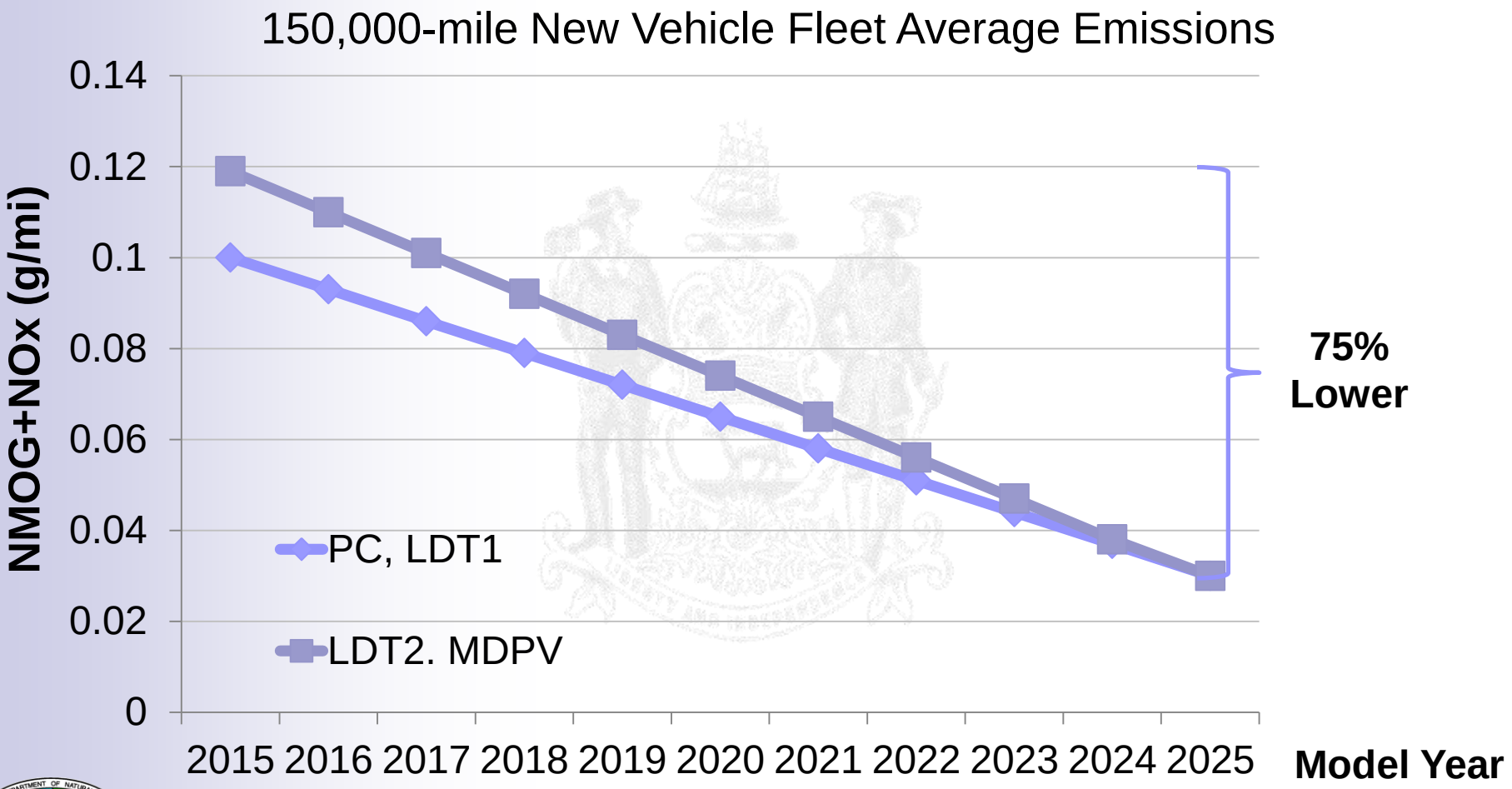
Exhaust Emission Requirements

- Reduce fleet average emissions of new PCs, LDTs and MDPVs to SULEV levels by 2025;
- Replace separate NMOG and NO_x standards to combined NMOG + NO_x standards;
- Increase full useful life durability requirements from 120,000 miles to 150,000 miles;
- Provide a backstop to assure continued production of SULEV;

Exhaust Emission Requirements

- Establish more stringent PM standards for LDTs and MDPVs;
- Establish more stringent SFTP standards for PC and LDTs and require MDPVs to meet SFTP standards; and
- Allow pooled fleet average NMOG + NO_x emissions from CA and Section 177 States that adopt the LEV III program.

LEV III Criteria Pollutant Fleet Average



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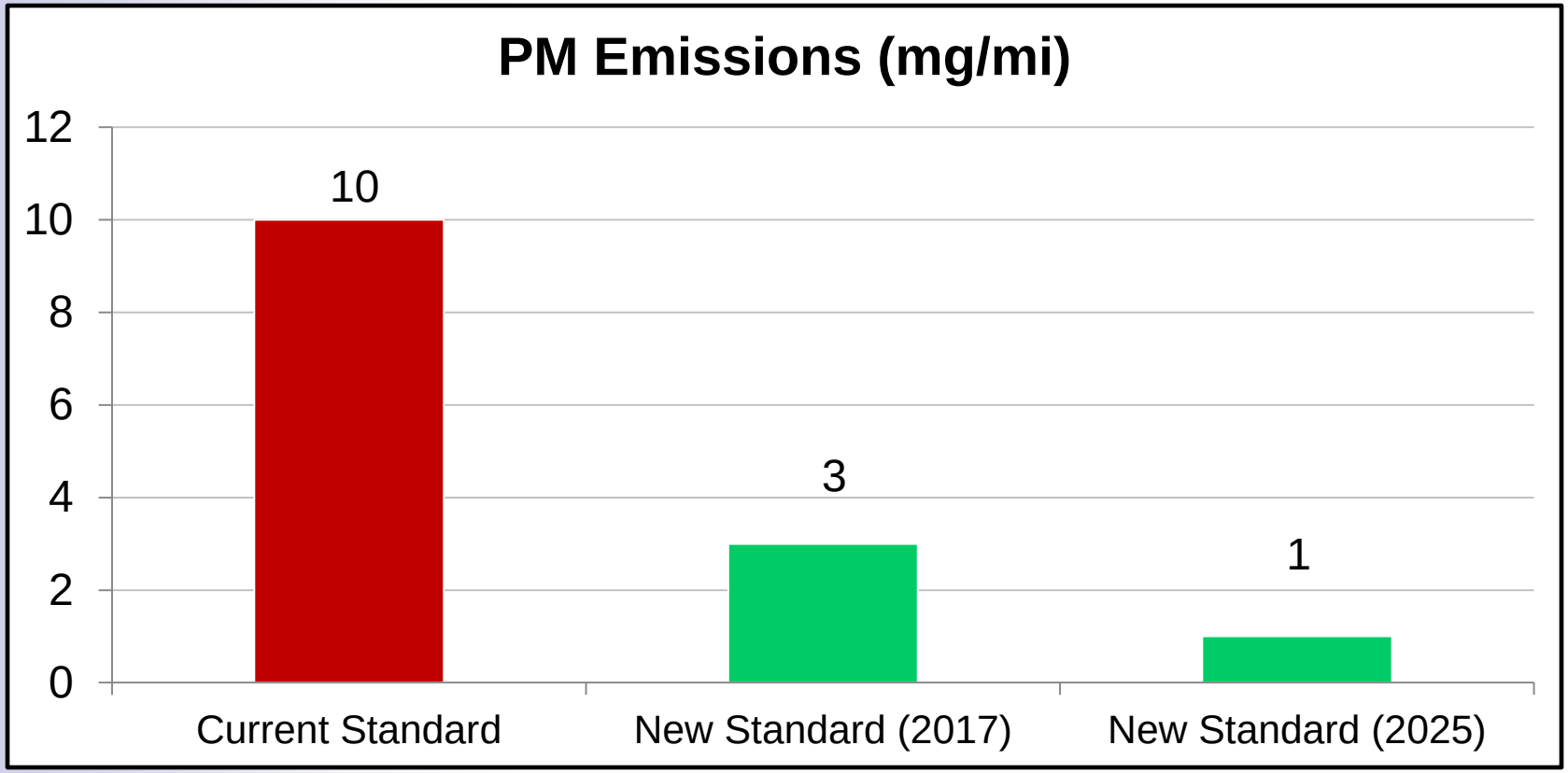
Fleet Average Emission Standard

- Combine NMOG + NO_x standards to enable manufacturers to more cost-effectively tailor emission control systems;
- Emission standards to which manufacturers may certify their vehicles, as long as fleet average emissions meet declining fleet average requirement; and
- Extended phase-in period for manufacturers to incorporate improved emission control systems.

LEV III Particulate Matter Standard



Greenhouse Gas Standards: Impacts on Fuel Economy

With annual greenhouse gas improvements of 3% to 6% per year

- Consumers would see an average real world fuel economy between 37 MPG and 50 MPG* by 2025
- Real world fuel economy is typically about 20% lower than the fuel economy measured on the official test cycles.

* MPG estimates simplistically assume that all emission reductions come from tailpipe improvements and that GHG reduction and MPG increases correlate absolutely.

Emission Benefits in Delaware

- Reactive Organic Gas (ROG)

Statewide **ROG (tons/day)**			
Calendar Year	Reductions from Existing LEV II Standards	Reductions from Proposed LEV III Standards	Benefits from LEV II to LEV III
2023	7.0	6.7	0.3
2025	6.5	6.0	0.5
2035	5.2	3.4	1.8

- Reactive Oxides of Nitrogen (NO_X)

Statewide NO_x (tons/day)			
Calendar Year	Reductions from Existing LEV II Standards	Reductions from Proposed LEV III Standards	Benefits from LEV II to LEV III
2023	7.4	6.8	0.6
2025	6.8	5.9	0.9
2035	5.0	3.2	1.8

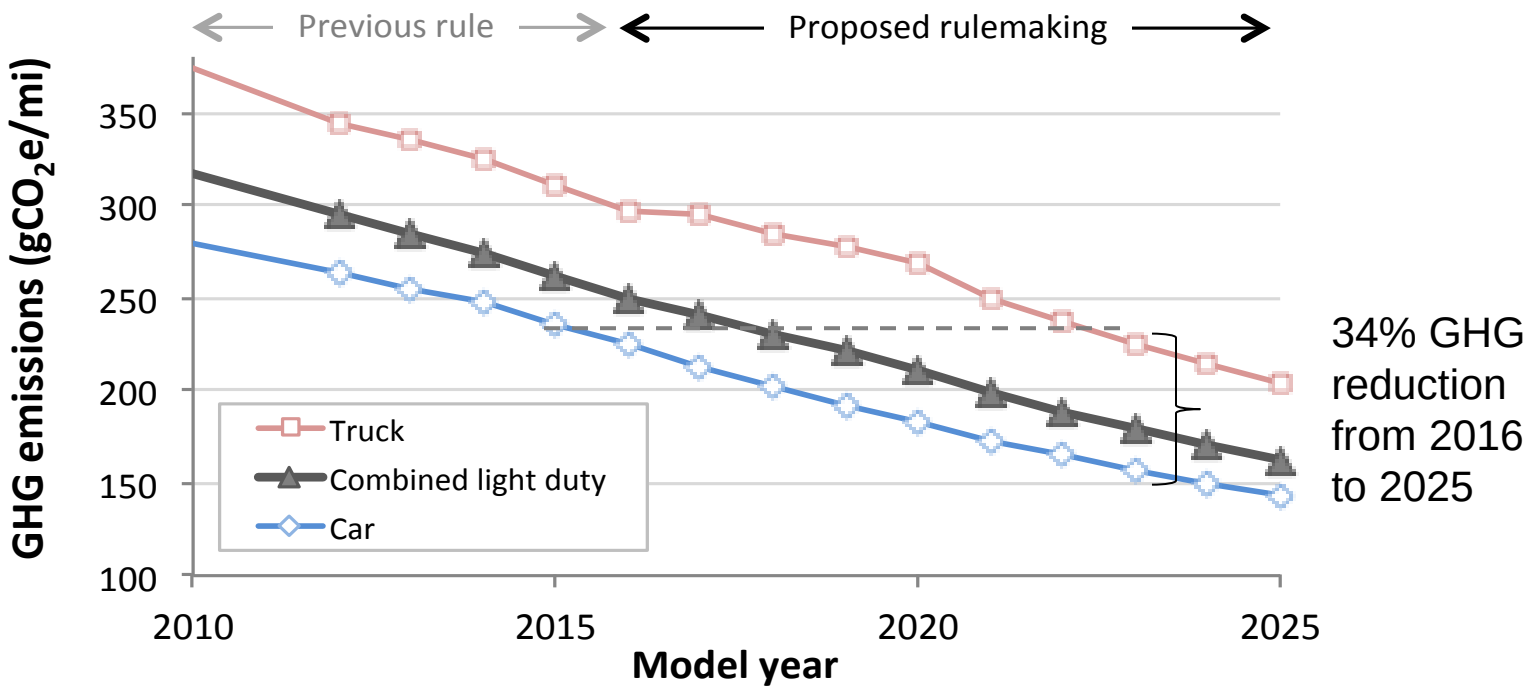
Emission Benefits in DE

- Particulate Matter ($PM_{2.5}$)

Statewide $PM_{2.5}$ (tons/day)			
Calendar Year	Reductions from Existing LEV II Standards	Reductions from Proposed LEV III Standards	Benefits from LEV II to LEV III
2023	0.9	0.9	0.0
2025	1.0	0.9	0.1
2035	1.1	0.9	0.2

Lower GHG Standards

- Proposal target: 166 gCO_2e/mile by 2025
  - GHG reduction of 4.6%/year for 2017-2025 model years
  - GHG reduction of 34% from 2016 to 2025



Greenhouse Gas Standards: 2025 Technologies

- More efficient engines
- More efficient transmissions
- Improved aerodynamics
- Wider choice of affordable hybrids
- More plug-in vehicles
- Advanced lightweight materials

ECONOMIC IMPACTS

Consumer Impact

- Average 2025 vehicle consumer impact:
  - Consumer savings greatly outweigh the cost (by 3-to-1 margin)
  - "Off the lot" savings from the first month
  - Overall payback within first vehicle purchaser

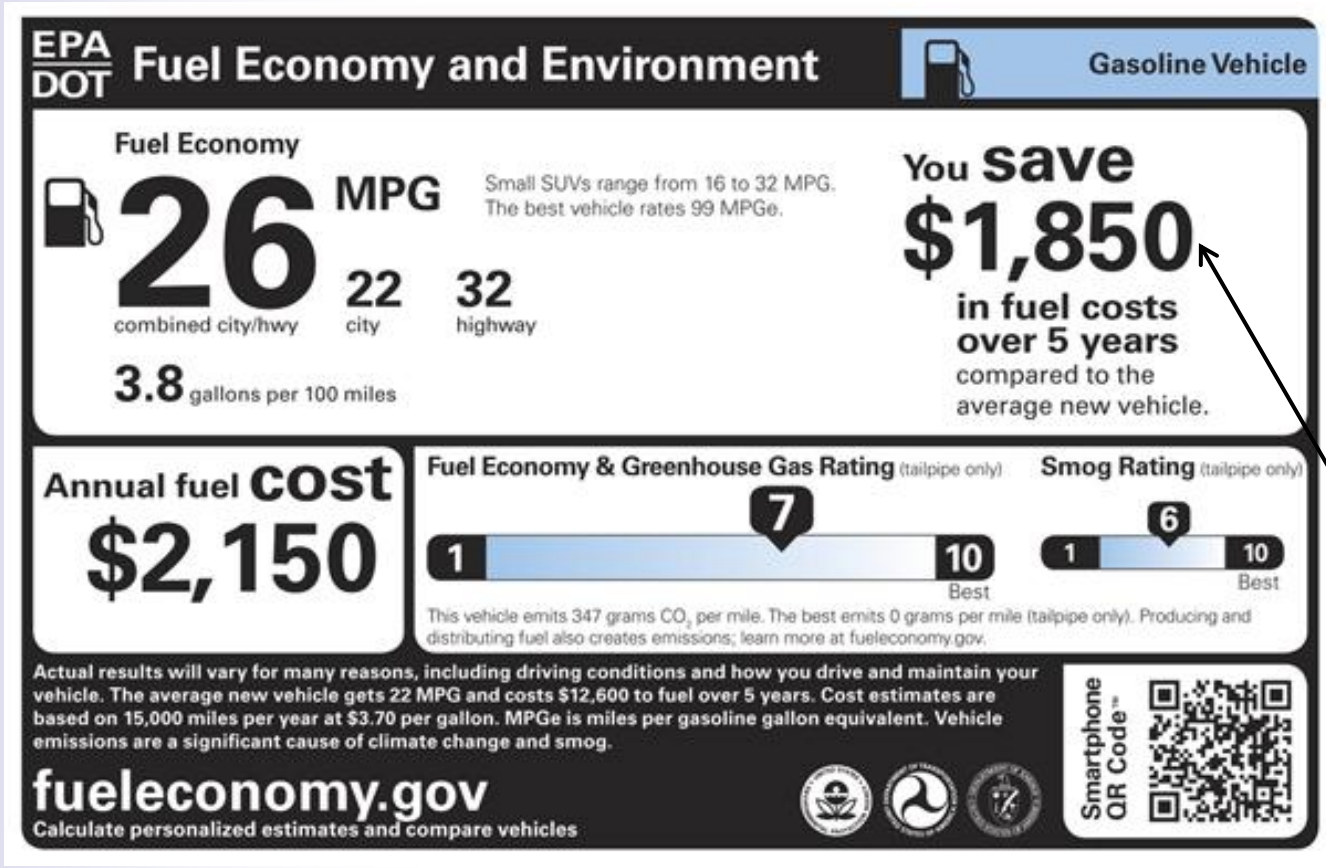
Lifetime effect per vehicle	Incremental technology price	$1,900
	Lifetime savings	$5,900
	Net lifetime savings	$4,000
	Payback period	3 years
Monthly effects for financed vehicle purchase	Increased monthly payment	$35
	Monthly fuel savings	$48
	Net monthly savings	$12

Note: values may not match due to rounding

Summary of Economic Impacts

- Lifetime fuel savings far exceed new vehicle price increase
- First owner breaks even on net cost
  - 3 ½ years or less
- Lifetime benefits of used cars far exceed the increased purchase price

Federal Fuel Economy and Environment Label



The label provides consumers with information on savings and fuel economy

Alternatives for deploying zero emission vehicles

- EV incentive based program
  - encourage the use of low emission vehicles
- Establish Public and Private Partnerships
- Consumer based Survey towards EV deployment sponsored by CARB and UC Davis

Path Forward

- Incentive Program Announced – 4th QTR 2013
- Delaware Register Publication – 4th QTR 2013
- Final Regulation – 4th QTR 2013

ANY QUESTIONS??